died six months later with no further pain and without recurrence of the gynaecomastia, the tamoxifen having been stopped after two months.

Case 2—A 67-year-old smoker was treated with radiotherapy to an inoperable squamous-cell carcinoma of the bronchus. Four months later he complained of painful, bilateral, asymmetrical gynaecomastia and wrist pain. Radiographs of the wrists were suggestive but not diagnostic of hypertrophic pulmonary osteoarthropathy. The breast and wrist pain disappeared within two weeks after starting tamoxifen, which was continued for a further three months. He died seven months later with no further symptoms from gynaecomastia or his wrists.

Case 3—This man, aged 73, had a long history of ischaemic heart disease with biventricular failure. He had received digoxin, spironolactone, and frusemide for several years, and when seen he had painful bilateral gynaecomastia. The digoxin and spironolactone were discontinued with no relief of pain. A biopsy specimen showed normal breast tissue. Analgesics were given for two months, with no relief. Tamoxifen was then begun and produced complete relief of pain within one week. Tamoxifen was stopped after six weeks with no recurrence of pain. The treatment caused no appreciable problems of fluid retention in this patient.

Comment

Tamoxifen produced regression of painless gynaecomastia in one other case of a gonadotrophin-secreting oat-cell carcinoma of the bronchus.[3] In the present three cases tamoxifen produced relief from disablingly painful gynaecomastia and regression of the swelling, which was maintained when tamoxifen was stopped.

Digoxin and spironolactone bind to the oestrogen receptor and stimulate breast proliferation. Discussion continues on whether lung tumours produce oestrogens in addition to gonadotrophins.[4] Nevertheless, in both cases tamoxifen could produce regression of gynaecomastia by blocking the oestrogen receptor. In case 2 the symptoms and signs suggestive of hypertrophic pulmonary osteoarthropathy, which has a known occasional association with gynaecomastia, were also relieved by tamoxifen. It has been suggested that the common link is altered oestrogen metabolism, and, if so, tamoxifen might relieve pain and be of benefit in pulmonary osteoarthropathy. From the three cases reported tamoxifen is certainly of benefit in painful gynaecomastia and deserves further study in treating pulmonary osteoarthropathy.

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Cytomegalovirus infection associated with lower urinary tract symptoms

Three members of a renal unit had a similar complex of urinary tract symptoms. Cytomegalovirus (CMV) was recovered from the urine of all three. Antibody titres against CMV during or shortly after the acute phase were negative, subsequently rising in two.

Case reports

All subjects were men over 30 years of age with no previous urological disorders. No subject's urine contained excess leucocytes, red cells, or protein. Cultures were bacteriologically sterile.

Case 1—This man had urgency and frequency of micturition, mild dysuria, suprapubic pain, nocturia, and the sensation of incomplete voiding. Symptoms developed over two days and lasted three weeks. After the initial illness an intravenous urogram was performed under steroid cover, and symptoms returned. Eight weeks later, alerted by the onset of similar symptoms in colleagues, urine was cultured for viruses and CMV isolated. CMV antibody could not be detected, but four weeks later was present at a dilution of 1/64.

Case 2—This man had an identical illness of similar duration. Four weeks afterwards, when asymptomatic, urine virus culture produced CMV. Antibody could not be detected either initially or one month later.

Case 3—He was on holiday during his colleagues' illnesses, and presented two weeks after returning. After a mild prodrome of malaise, headache, and myalgia he developed symptoms similar to the others, though dysuria was more severe. CMV was isolated from urine during the illness and eight weeks later. CMV antibody titre in the acute phase was less than 1/8, rising to 1/64 after 10 weeks.

All subjects agreed that the most striking feature was the sensation that voiding was incomplete. None had urethral discharge. Apart from the transient prodrome in case 3, no features of "classical" CMV infection were recognised. Coincident with their acute illnesses, the wives of two of the men (cases 2 and 3) had transient dysuria and frequency of micturition. The two young children of one of the men (case 3) had acute, non-suppurative parotitis for three days and malaise, fever, lymphadenopathy, hepatosplenomegaly, and generalised macular rash for five days, respectively. Neither underwent investigation. The subjects could not identify a single infective source, though all routinely handle urine and blood specimens, including those from patients receiving immunosuppressive treatment.

Virus studies—Freshly voided urine samples were neutralised and inoculated into human embryonic lung monolayer cultures. Isolates were identified by cytopathogenic effect and specific immunofluorescence. Antibody tests were by complement fixation using cytomegalovirus strain AD 169.

Comment

Attempts to identify CMV as an agent in non-specific urethritis have been unsuccessful.[1] Although dysuria may occur during a glandular fever-like illness due to CMV,[2] we know of no other report in which symptoms referable exclusively to the lower urinary tract have been associated with CMV isolation. The incidence of urinary excretion of CMV is high in patients receiving immunosuppressive treatment, and in one of our subjects (case 1) symptoms returned after administration of steroids. Other viruses have been associated with lower urinary tract disorders, including adenoviruses in acute haemorrhagic cystitis[3 4] and *Herpesvirus hominis* type 2 in vulvovaginitis and penile infections.[5]

A fortuitous association between isolation of CMV in all and a rise of antibody titre in two of the three apparently non-immune subjects with identical clinical features is improbable. The unlikely possibility remains that another agent was responsible for the syndrome and reactivation of latent CMV had occurred. If the subjects had not worked in a renal unit their common illness may not have been recognised. This report shows the value of virus studies in patients with lower urinary tract symptoms without bacteriuria.

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Controlled trial of cyclophosphamide in active chronic hepatitis

Although survival in hepatitis-B-negative active chronic hepatitis (ACH) is prolonged by corticosteroid treatment,[1] side effects are common,[1 2] so other effective treatments are needed. Azathioprine may be beneficial when combined with prednisone, although not when given alone.[1] Cyclophosphamide has been reported to induce biochemical remission of ACH[3] and, in combination with prednisone, to produce dramatic histological resolution,[4] but these observations